POPULATION AND LAND USE IN THE THAMES RIVER BASIN

Ontario
Ministry of the Environment

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POPULATION AND LAND USE
IN
THE THAMES RIVER BASIN

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FOREWORD

This report is one of a series of technical reports presenting detailed results of individual studies carried out as part of the Thames River basin water management study. The technical reports are designed to supplement the main report which summarizes the findings of the study and outlines recommended courses of action for water management in the Thames River basin. These reports will prove useful as support documents to those who wish to delve more deeply into any one aspect of water management in the basin.

Erratum

The map which follows page 6 should follow page v.

INTRODUCTION

This report analyzes the population and land-use patterns in the Thames River watershed with emphasis on the period 1961-1971. Growth rates, areas of urban concentration and rural distribution are examined. The housing situation in the watershed, agricultural practices and recreational potential are discussed. Tables are included which provide detailed data on the above topics.

CHAPTER 1

POPULATION TRENDS

1.1 ANALYSIS OF THE POPULATION OF THE THAMES RIVER WATERSHED: 1961-1971

General

Between 1941-1971, the population of the Thames River watershed rose from about 214,256 to 415, 310 and grew at an average annual rate of 2.24%. During the first ten years of this period, total population had increased by 20%, reaching a total of 257,384 by 1951. The following decade was marked by faster growth and by 1961, there were 336,699 persons in the watershed. This represented an increase of 31% and a growth rate of 2.75% per annum over the ten years. Between 1961-1971, total population increased by 23%, growing at the rate of 2.12% per annum.

Urban Population

In 1971, 333,737 persons, or 80.36% of the total population of the watershed lived in cities, towns, and villages. The City of London was the largest urban centre with a population of 219,921, or 52.94% of the total population in the watershed. Other significant population concentrations are seen in Chatham, Woodstock and Stratford.

Over the period of 1961-1971 the urban population increased by 21.8% at a rate of 2.5% per annum. As previously mentioned, although the watershed as a whole has undergone increased population growth, more and more of the total population was found to be in the urban centres. Again, the City of London is the focus of this urban population expansion. Increasing over the period at an average rate of 3.13% per annum, the city is the fastest growing centre. The City of Woodstock (2.13%/yr.) and the villages of Embro (2.5%/yr.) and Glencoe (2.00%/yr.) all had average annual growth rates of at least over 2%. Most other urban centres underwent relatively moderate population increases. However, for the same period, some centres have experienced a decline in population as revealed by the slight negative annual rates. Bothwell, and Thamesville of Kent County, and St. Marys and Wardsville of Middlesex fall into this category.

Rural Population

The rural population of the watershed has been examined at the county level. As in the urban case, the rural population increased in the ten year period under study. These increments

however, were relatively smaller. By 1971 there were 81,573 persons in the rural townships representing an increase of 7.6% over the 1961 figure of 75,834 with an average growth rate of 0.74 per cent per year. Middlesex County included the highest proportion of the rural population with (5.74%) of the total water population followed by Oxford (4.44%) and Kent (4.43%). These counties were not only the largest in terms of area in the watershed but also contained the largest urban centres. It appears that townships contributing most to the rural population increase are those located adjacent to large urban centres such as London and Chatham, where high proportions of rural non-farm residents or "urban commuters" are found.

In 1971, the rural townships comprised 19.64% of the total watershed population, a decrease from the 1961 figure of 22.52%. All counties had experienced relatively small positive population growth for their rural populations. Furthermore, all except Middlesex, sustained most of their growth in the latter half of the period under study.

TABLE 1 - Past Urban Population Trends in the Thames River Watershed[1]

	Municipality	1961	1966	1971
	London(C) M			
Population		161,554	187,624	219,921
% of Watershed		47.98%	50.24%	52.88%
	Chatham(C) K	29,332	31,479	33,671
		8.71%	8.43%	8.10%
	Woodstock(C) O	20,303	23,828	25,081
		6.03%	6.38%	6.03%
	Stratford(C) P	20,536	22,791	23,380
		6.10%	6.10%	5.62%
	Blenheim(T) K	3,134	3,203	3,431
		0.93%	0.86%	0.82%
	Bothwell(T) K	825	826	813
		0.25%	0.22%	0.20%
	Ingersoll(T) O	7,283	7,245	7,755
		2.16%	1.94%	1.86%
	Mitchell(T) P	2,243	2,414	2,553
		0.67%	0.65%	0.61%
	Ridgetown(T) K	2,560	2,721	2,826
		0.76%	0.73%	0.68%
	St.Marys (T) P	4,515	4,686	4,495
		1.34%	1.25%	1.08%
	Tilbury(T) K	3,086	3,370	3,613
		0.92%	0.90%	0.87%
	Beachville(V) O	836	933	991
		0.25%	0.25%	0.24%
	Embro(V) O	542	608	692
		0.16%	0.16%	0.17%
	Glencoe(V) M	1,139	1,167	1,392
		0.34%	0.31%	0.33%
	Highgate(V) K	385	423	420
		0.11%	0.11%	0.10%
	Tavistock(V) O	1,220	1,261	1,365
		0.36%	0.34%	0.33%
	Thamesville(V) K	1,041	1,013	1,017
		0.31%	0.27%	0.24%
	Wardsville(V) M	331	308	330
		0.10%	0.08%	0.08%
	Total Urban Population:	260,865	295,900	333,737
	% of Watershed:	77.48%	79.22%	80.36%

[1] Letters after name of municipality refer to the following:

K = Kent
M = Middlesex
O = Oxford
P = Perth
C = City
T = Town
V = Village

SOURCE: Municipal Directory, TEIGA; July 1973

TABLE 2 - Past Trends in Rural Population of Counties in the Thames River Watershed

County	1961	1966	1967	1968	1969	1970	1971
Elgin							
Total Rural	3,242	3,304	3,076	3,211	3,374	3,454	3,467
% of Watershed	0.96%	0.88%	0.80%	0.82%	0.84%	0.85%	0.83%
Essex	3,519	3,614	3,698	3,757	3,902	3,962	4,086
	1.05%	0.97%	0.96	0.96	0.97	0.98	0.98
Kent	18,289	17,680	18,162	18,291	18,487	18,391	18,405
	5.43	4.73	4.73	4.66	4.61	4.52	4.43
Middlesex	21,100	22,654	22,911	23,221	23,357	23,994	23,854
	6.27	6.08	5.96	5.91	5.84	5.90	5.74
Huron	310	310	305	311	311	317	323
	0.09%	0.08	0.08	0.08	0.08	0.09	0.08
Oxford	16,667	17,409	17,587	17,837	18,037	18,237	18,455
	4.95%	4.66	4.58	4.54	4.50	4.49	4.44
Perth	12,707	12,631	12,699	12,688	12,832	12,890	12,983
	3.77%	3.38	3.31	3.23	3.20	3.16	3.13
Total:	**75,834**	**77,602**	**78,438**	**79,316**	**80,300**	**81,245**	**81,573**
Total & Rural	22.52%	20.78%	20.42%	20.20%	20.04%	19.99%	19.64%

SOURCE: Municipal Directory, TEIGA, Conservation Authorities Branch, Ministry of Natural Resources

TABLE 3 - "Average Annual Growth Rates for Rural and Urban Population in the Thames River Watershed"

URBAN

Municipality	1961-1966	1966-1971	1961-1971
London(C) M	3.00%	3.25%	3.13%
Chatham(C) K	1.44%	1.38%	1.41%
Woodstock(C) O	3.25%	1.04%	2.13%
Stratford (C) P	2.13%	0.51%	1.25%
Blenheim(T) K	1.27%	1.38%	0.92%
Bothwell (T) K	0.02%	-0.33%	-0.31%
Ingersoll (T) O	0.13%	1.38%	0.64%
Mitchell (T) P	1.47%	1.14%	1.31%
Ridgetown (T) K	1.22%	0.77%	1.00%
St. Marys (T) P	0.76%	-0.80%	-0.08%
Tilbury (T) K	1.78%	1.41%	1.59%
Beachville (V) K	2.25%	1.21%	1.72%
Embro (V) O	2.31%	2.63%	2.50%
Glencoe (V) M	0.51%	3.63%	2.00%
Highgate (V) K	1.91%	-0.15%	0.88%
Tavistock (V) O	0.69%	1.47%	1.06%
Thamesville (V) K	-0.56%	0.08%	-0.24%
Wardsville (V) M	-1.47%	1.38%	-0.08%
Total Urban Population:	2.56%	2.44%	2.50%

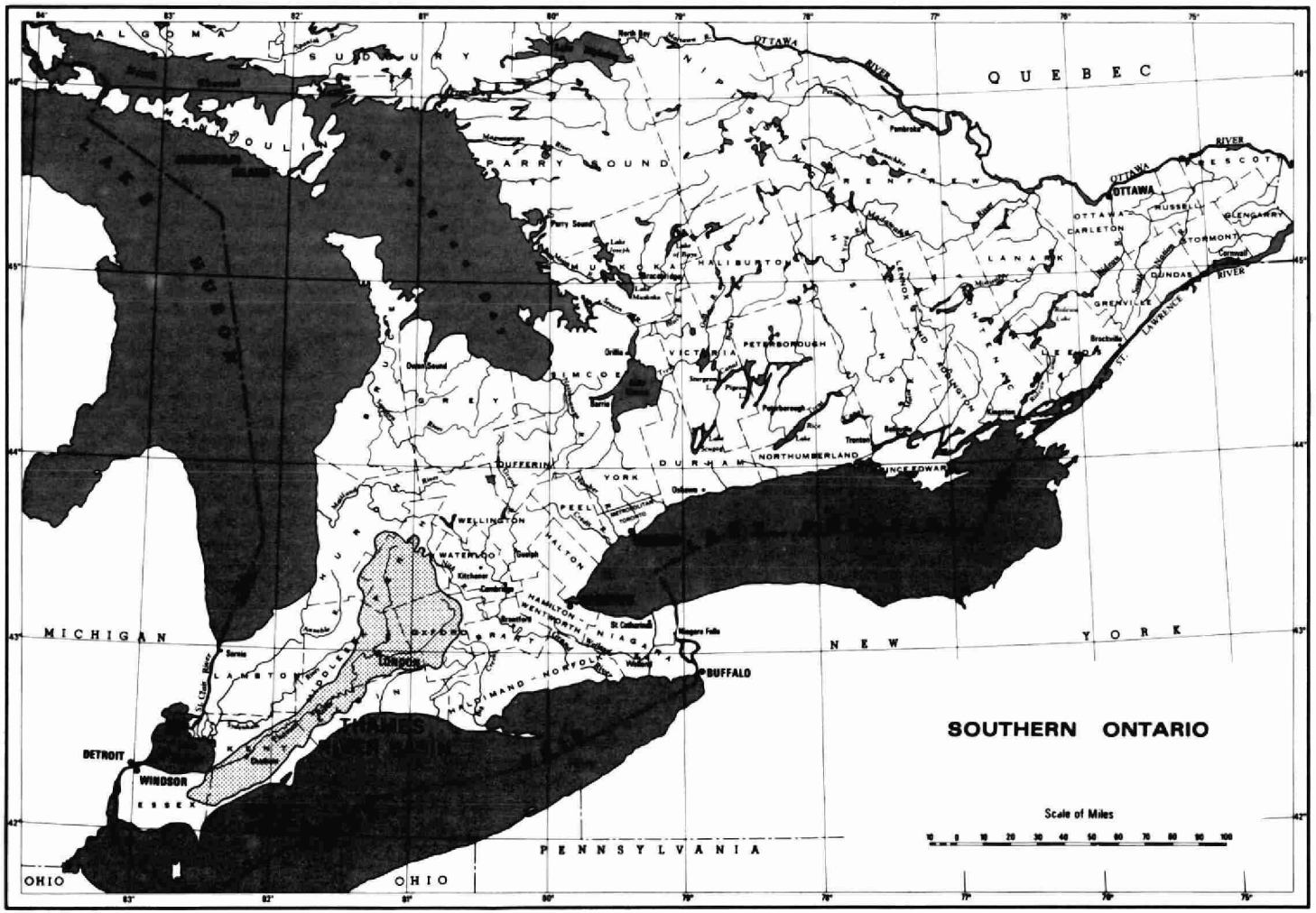
RURAL

County			
Elgin	0.40	0.97	0.68
Essex	0.55	2.50	1.50
Kent	-0.69	0.83	0.06
Middlesex	1.44	1.03	1.25
Huron	0	0.83	0.42
Oxford	0.90	1.19	1.03
Perth	-0.12	0.57	0.21
Total Rural Population:	0.47	1.00	0.74

K = Kent
M = Middlesex
O = Oxford
P = Perth

C = City
T = Town
V = Village

SOURCE: Municipal Directory, TEIGA; July 1973



Map 1. Location and extent of the Thames River basin.

1.2 GENERAL COMMENTS ON POPULATION PROJECTIONS FOR COUNTIES IN THE THAMES WATERSHED

The following section consists of general comments on the future population projections, and the factors influencing them, for the counties encompassing the Thames River Watershed. Discussion relates to each county as a whole, and is not limited to the area lying within the watershed.

Elgin County

Continuing Trends: There appear to be two constraints on future population growth in Elgin County. These are the predominance of agriculture and the fact that the only two centres capable of supporting urban growth are in close proximity to the city of London, and hence must compete with this larger centre for residential growth. There appears to be no significant short-term (to 1986) growth factors operating in Elgin County.

Recent Developments: Recent developments indicate a continuous positive population change for the county. Elgin county's location along the Lake Erie shoreline, combined with the increasing attraction of the shoreline to large-scale industries, will create significant growth pressure. The county is also in a geographically advantageous position for attracting automotive-related industries due to its excellent transportation linkages with the United States. Most of the staff employed in the Ford auto assembly plant at Talbotville live in the London-St. Thomas area. As Ford expands its own capacity, and as related service and manufacturing industries adjust to its location, a positive influence on population growth via the "multiplier effect" will continue to be exerted.

	Total Population of Elgin County	Population of Elgin County in Thames Watershed	Per cent of Population in Thames Watershed
1971	63,359	3,462	5.4%

Essex County

Continuing Trends: There appear to be no over-riding population growth constraints in Essex County. A positive population growth factor is proximity to Detroit and Windsor, large urban centres capable of generating service and manufacturing employment.

	Total Population of Essex County	Population of Essex County in Thames Watershed	Per cent of Population in Thames Watershed
1971	299,104	4,086	1.3%

Middlesex County

Continuing Trends: There are very few growth constraints of any significance in the county. In the past, the agricultural sector has had a moderating influence on growth, but as this sector contracts, so too will its influence. The City of London, located in the county, represents the obvious positive factor on future population growth. London continues to be strong in the fast-growing and generative activities of education, retailing, and finance. This urban centre is capable of taking advantage of the full range of urbanization forces in its continued growth. Middlesex County itself is centrally located in Southwestern Ontario and London lies along the major east-west highway in the region (the Macdonald-Cartier Freeway).

Recent Developments: London's role as a focal point in Southwestern Ontario will be reinforced by the expansion of the London airport and the proposed construction of a Sarnia-London limited access highway.

	Total Population of Middlesex County	Population of Middlesex County in Thames Watershed	Per cent of Population in Thames Watershed
1971	276,292	246,984	89.4%

Oxford County

Continuing Trends: Constraints on future population growth in Oxford include the presence of a predominantly agricultural base, the absence of a large metropolitan centre capable of taking advantage of the forces of urbanization, and the close proximity to competing centres, such as London, Brantford, and Kitchener-Waterloo. On the other hand, the Macdonald-Cartier Freeway has helped to attract manufacturing industries and benefits accrue from the county's location along this Toronto-London-Detroit corridor.

	Total Population of Oxford County	Population of Oxford County in Thames Watershed	Per cent of Population in Thames Watershed
1971	78,023	54,239	69.5%

Huron County

Continuing Trends: For Huron County, factors constraining future population growth include the absence of a major urban centre, its remoteness rendering it as an unfavourable location for industry, and a predominant agricultural base. Calculated projections have shown a slight population decline of approximately 700 people between 1971 and 1986 for the county as a whole. Yet, positive population growth factors can include the county's proximity to the urban centre of London as the area has benefited from London's urban overspill. Also the Lake Huron shoreline offers growth for the recreation industry.

Total Population of Huron County	Population of Huron County in Thames Watershed	Per cent of Population in Thames Watershed
52,007	313	0.4%

Kent County

Continuing Trends: Limiting factors on population growth in the county include a predominant agricultural base, servicing constraints inland (for example, increased water supply would have to come from Lake Erie), an absence of any large urban centres, and the close proximity to alternative centres such as London and Windsor. Such population growth constraints are significant in a county where there are no expected major growth factors.

	Total Population of Kent County	Population of Kent County in Thames Watershed	Per cent of Population in Thames Watershed
1971	97,235	64,212	66.0%

Perth County

Continuing Trends: Population growth constraints for this county include a remote location, poor accessibility, the proximity of population and industrial centres such as London, Kitchener-Waterloo, and the absence of a large urban centre in the county itself. Perth County has benefited a great deal from the recent automotive agreement but this effect is expected to moderate somewhat in the future. Another positive growth factor for the county is the location of the Shakespearean Festival at Stratford.

	Total Population of Perth County	Population of Perth County in Thames Watershed	Per cent of Population in Thames Watershed
1971	61,754	43,473	70.4%

TABLE 4

THAMES RIVER BASIN STUDY

Estimated Population for Urban Areas
1971 - 2001

	Municipality	1971*	1976	1981	1986	1991	1996	2001
1.	London (C)	219,921	254,400	293,500	338,600	390,000	450,000	500,000
2.	Chatham (C)	33,671	36,800	40,200	44,000	48,000	52,300	57,000
3.	Woodstock (C)	25,081	28,000	31,400	35,000	39,100	43,800	49,000
4.	Stratford (C)	23,380	25,800	28,500	31,500	35,000	38,200	42,000
5.	Blenheim (T)	3,431	3,800	4,190	4,630	5,110	5,640	6,230
6.	Bothwell (T)	813	880	950	1,030	1,110	1,190	1,290
7.	Ingersoll (T)	7,755	8,360	9,000	9,700	10,440	11,250	12,130
8.	Mitchell (T)	2,553	2,760	2,970	3,200	3,450	3,710	4,000
9.	Ridgetown (T)	2,826	3,020	3,220	3,410	3,600	3,790	4,000
10.	St. Marys (T)	4,495	4,840	5,220	5,620	6,050	6,520	7,030
11.	Tilbury (T)	3,613	3,950	4,300	4,700	5,120	5,580	6,090
12.	Beachville (V)	991	1,070	1,150	1,240	1,340	1,440	1,550
13.	Embro (V)	692	740	810	870	930	1,000	1,080
14.	Glencoe (V)	1,392	1,550	1,730	1,920	2,130	2,370	2,630
15.	Highgate (V)	420	450	480	520	560	610	660
16.	Tavistock (V)	1,356	1,460	1,570	1,690	1,820	1,960	2,120
17.	Thamesville (V)	1,017	1,100	1,180	1,270	1,370	1,480	1,600
18.	Wardsville (v)	330	380	440	510	590	680	800
	Total:	333,737	379,360	430,810	489,410	555,720	631,520	699,210
19.	Dutton (V)							
20.	Rodney (V)							
21.	West Lorne (V)							

*Source: TEIGA. Ontario Population Statistics

C - City
T - Town
V - Village

TABLE 5

THAMES RIVER BASIN STUDY - ESTIMATED POPULATION FOR RURAL AREAS

	Municipality (Townships)	County	Population In Watershed 1971	1976	1981	1986	1991	1996	2001
22.	Aldborough	E	1526	1630	1770	1900	2050	2220	2380
23.	Dunwich	E	1062	1150	1250	1340	1440	1560	1670
24.	Southwold	E	863	930	1020	1090	1170	1270	1360
25.	Tilbury (N)	EX	1539	1570	1700	1840	1970	2140	2300
26.	Tilbury (W)	EX	1128	1170	1270	1370	1470	1600	1710
27.	Camden	K	423	450	490	530	570	620	660
28.	Chatham	K	931	1000	1090	1170	1260	1360	1470
29.	Dover	K	1171	1250	1360	1460	1570	1700	1830
30.	Harwich	K	4000	4490	5050	5760	6520	7350	8340
31.	Howard	K	1894	2080	2260	2430	2600	2840	3080
32.	Orford	K	1084	1190	1300	1400	1500	1630	1740
33.	Raleigh	K	4894	5270	5680	6120	6580	7100	7600
34.	Romney	K	649	690	740	780	840	890	940
35.	Tilbury (E)	K	2767	2960	3200	3460	3700	4030	4300
36.	Zone	K	592	630	680	740	790	860	920
37.	Caradoc	M	1655	1760	1900	2050	2200	2400	2560
38.	Delaware	M	1409	1670	1810	1950	2090	2270	2430
39.	Ekfrid	M	1398	1480	1610	1730	1860	2020	2160
40.	Mosa	M	601	660	720	770	820	900	970
41.	Westminster	M	3945	4470	5070	5740	6500	7330	8320
42.	Usborne	H	288	300	330	360	390	420	450
43.	Biddulph	M	666	710	770	840	900	970	1050
44.	Dorchester (N)		5381	6080	6900	7800	8800	9960	11300
45.	Lobo	M	726	820	880	950	1020	1100	1190
46.	London	M	4942	5580	6320	7160	8100	9130	10360
47.	Nissouri (W)	M	3131	3500	3860	4270	4730	5200	5740
48.	Blandford	O	718	780	840	910	970	1060	1140
49.	Dereham	O	2318	2440	2650	2850	3050	3320	3550
50.	Nissouri (E)	O	3379	3600	3920	4220	4530	4920	5260
51.	Oxford (E)	O	941	1010	1100	1180	1260	1380	1470

	Municipality (Townships)	County	Population In Watershed 1971	1976	1981	1986	1991	1996	2001
52.	Oxford (N)	O	1810	1900	2070	2230	2390	2600	2780
53.	Oxford (W)	O	3020	3180	3460	3720	3990	4340	4640
54.	Zorra (E)	O	4006	4290	4660	5020	5370	5850	6250
55.	Zorra (W)	O	2213	2390	2600	2800	3000	3260	3480
56.	Blanshard	P	1856	2000	2180	2340	2510	2730	2920
57.	Downie	P	2477	2670	2900	3120	3350	3640	3890
58.	Easthope (N)	P	1023	1060	1150	1240	1330	1450	1550
59.	Easthope (S)	P	1506	1610	1750	1890	2030	2200	2350
60.	Ellice	P	2444	2580	2800	3020	3230	3520	3750
61.	Fullarton	P	1556	1680	1820	1960	2100	2290	2450
62.	Logan	P	1802	1950	2120	2280	2440	2660	2840
63.	Mersea	EX	1419	1570	1730	1910	2110	2330	2570
64.	Dorchester (S)	El	16	18	19	21	23	26	29
65.	Norwich (N)	O	50	55	61	67	74	82	90
66.	Hibbert	P	265	300	334	365	404	449	502
67.	Mornington	P	54	60	66	73	80	88	98
68.	McKillop	H	16	17	18	20	22	25	28
69.	Grey	H	19	20	22	24	27	30	33
	Total:		81,573	88,670	97,340	106,270	115,730	123,600	138,510

E = Elgin
EX = Essex
K = Kent
H = Huron
M = Middlesex
O = Oxford
P = Perth

1973 Population in Watershed, Source: Ontario Municipal Directory and Conservation Authorities Branch.

TABLE 6: THAMES RIVER BASIN STUDY

TOTAL ESTIMATED POPULATION FOR URBAN AND RURAL AREAS

	1971	1976	1981	1986	1991	1996	2001
Urban	333,737	379,360	430,810	489,410	555,720	631,520	699,210
Rural	81,573	88,670	97,340	106,270	115,730	123,600	138,510
Total:	415,310	468,030	528,150	595,680	671,450	755,120	837,720

CHAPTER 2 - LAND USE TRENDS

2.1 ANALYSIS OF LAND USE

General

The Thames River watershed covers approximately 1,416,320 acres of land, or 2,213 square miles. Included within its boundaries are 18 urban municipalities consisting of 4 cities, 7 towns, and 7 villages. These urban centres, occupying a total of about 70,508 acres, or 110 square miles, represent 5% of the total area of the watershed. (see Table 7).

The Thames River watershed also occupies, in part, the areas of 48 rural townships included in 7 counties. These townships comprise 95% of the watershed, or about 2,103 square miles. Their predominant land-use is agriculture, which represents a major component of the economic base of the watershed.

In the following sections, reference has also been made to the 'Thames River Region', an area defined on the basis of political rather than watershed boundaries in order to lend more credence to economic data. The 'Region', covers about 3,844 square miles and is thus larger than the 'watershed', since the total areas of the rural townships, and not just their watershed territories, are included for analysis.

Urban

In 1971, the cities, towns, and villages covered 5% of the Thames River watershed, yet contained over 80% of its population. At the top of the urban hierarchy is the centrally located, urban centre of London. The Cities of Woodstock, Chatham, and Stratford, which serve as sub-regional centres, have roughly the same population and function, and dominate their respective counties. Towns and villages tend to be oriented toward more local situations and needs. Table 8 describes six broad land-use classifications for the cities and towns in the watershed for which such data are available.

London

In terms of population and economic diversity, the Thames River watershed is dominated by the City of London. In 1971, London contained almost 220,000 persons, representing two-thirds of the urban population and over half of the total population of the Thames River watershed. Between 1961 and 1971, the population increased by about 36%, expanding at a rate of about 3.1% per annum. In the latter half of the decade, the population grew at an even more rapid rate of 3.25% per annum necessitating an annexation of surrounding land in 1967. London's preeminence is partially due to the relatively good

TABLE 7: TOTAL AREAS FOR URBAN MUNICIPALITIES IN THE THAMES RIVER WATERSHED

Cities and Towns	Area (acres)
London (M)	38,695
Chatham (K)	5,611
Woodstock (O)	6,111
Stratford (P)	4,863
Blenheim (K)	750
Bothwell (K)	500
Ingersoll (O)	2,789
Mitchell (P)	1,424
Ridgetown (K)	973
St. Marys (P)	2,860
Tilbury (K)	1,227
	65,803
Villages	
Beachville (O)	814
Embro (O)	1,400
Glencoe (M)	500
Highgate (K)	651
Tavistock (O)	392
Thamesville (K)	448
Wardsville (M)	500
	4,705

Total area of Urban Municipalities: 70,508 acres or 110 square miles.

employment opportunities in a varied manufacturing sector which includes the "rapid growth" industries of electrical products, transportation equipment, metal fabricating and machinery manufacturing. The city also continues to be strong in the fast-growing and generative activities of retailing, wholesaling, and financing, and also provides the Thames Region with many services such as government offices, social and economic activities, and health and education facilities. Indeed, London serves many urban centres and people well beyond the physical area of the Thames River watershed.

The City of London occupies 38,695 acres or just over 60 square miles. Table 2 indicates that about 32 percent of this total, or 12,324 acres, is used for residential purposes. The resultant residential density is about 17.9 persons per gross acre.

Industrial lands constitute 8.2 percent of the city area (3,162 acres) and commercial lands account for 1,252 acres or 3.2 percent of the total. Institutional lands, including churches, schools, hospitals etc., cover 13,433 acres or 8.9 percent of the city area. Parks and open space encompass 1,495 acres, or 3.9 percent of the total. A large portion of the city area, 17,029 acres or 44 percent, is still under agricultural and vacant land-use, although a large part of this figure is designated for other uses in the future.

Chatham

The City of Chatham is the watershed's second largest centre, comprising 8.2 percent of its total urban population. Providing many of the jobs and most of the services for Kent County, Chatham experienced a population growth rate of about 1.4 percent per annum between 1961 and 1971. For this decade, Chatham attracted 56 percent of Kent County's entire population growth, and expanded its city boundaries in 1970.

According to 1970 statistics, the City of Chatham contains about 5,611 acres, or 8.8 square miles. Residential lands account for 2,059 acres, or about 37 percent of this total, and have a density of 16.4 persons per gross acre. Industrial lands constitute 969 acres, or 17 percent of the city area, and 4 percent of the city area (208 acres) is under commercial uses. Institutional lands total about 473 acres, or 8 percent of the city area, while existing land devoted to open space accounts for 346 acres or 6% of the city area. Agricultural and vacant lands comprise about 1,556 acres, or 28 percent of Chatham's total area.

Woodstock

The City of Woodstock plays an important supporting role to London in both secondary and tertiary sectors and maintains active trade and community and business service sectors. The city has a broad economic base including three "rapid growth" industries: machinery, non-metallic mineral products, and transportation equipment. For the 1961-1971 period, Woodstock underwent a population growth rate of 2.13 percent per annum and in 1967, annexed over 640 acres of additional land.

According to 1973 figures, Woodstock encompasses about 6,111 acres, or 9.5 square miles. Of this total, 28 percent, or 1,712 acres, are existing residential lands having a residential density of 14.7 persons per gross acre. Industrial lands account for 9 percent of the city area, or 552 acres, while commercial lands total 206 acres, or about 3 percent of the city area. Institutional lands comprise 285 acres, or about 5 percent of the city area, and existing open space consists of 728 acres, or 12 percent of the city area. Agricultural and vacant lands account for the largest land-use, containing 43 percent or 2,628 acres of city area.

Stratford

The City of Stratford serves as a sub-regional centre for governmental, educational, health and welfare services, a retailing centre for Perth County and a major portion of Huron County, and a manufacturing centre with special emphasis in the rubber and leather, machinery, and furniture industries. It is also the home of the Shakespearean Festival which has become a major industry of the City. Between 1961-1971, the population of Stratford grew at a rate of 1.25% per annum and in 1967, the city annexed over 1,600 acres of surrounding land.

The City of Stratford contains about 4,863 acres, or 7.6 square miles. According to a 1965 land-use study, existing residential lands accounted for 988 acres, or 30 percent of the city area (in 1965, the city area was only 3,263 acres). Industrial lands comprised 530 acres, or 16 percent of the city area while about 2 percent, or 81 acres of city area was devoted to commercial uses. Land for institutional purposes occupied 242 acres, or 7 percent of the total area. Parks and open space consisted of 346 acres, or 11 percent of the city area. The balance of Stratford's land, about 1/3 of the total area, or 1,076 acres, was used for agricultural and vacant land purposes.

TABLE 8: EXISTING URBAN LAND-USES FOR CITIES AND TOWNS IN THE THAMES RIVER WATERSHED

AREA IN GROSS* ACRES

Municipality	Residential	Commercial	Industrial	Institutional	Agricultural and Vacant	Open Space	Total
London (C) M	13,324	1,252	3,162	3,433	17,029	1,495	38,695
	31.8%	3.2%	8.2%	8.9%	44.0%	3.9%	100%
Chatham (C) K	2,059	208	969	473	1,556	346	5,611
	36.7%	3.7%	17.3%	8.4%	27.7%	6.2%	100%
Woodstock (C) O	1,712	206	552	285	2,628	728	6,111
	28.0%	3.4%	9.0%	4.7%	43.0%	11.9%	100%
Stratford (C) P**	988	81	530	242	1,076	346	3,263
	30.3%	2.5%	16.2%	7.4%	33.0%	10.6%	100%
Blenheim (T) K	313	40	47	35	303	12	750
	41.7%	5.3%	6.3%	4.7%	40.4%	1.6%	100%
Bothwell (T) K	124	115	65	17	331	10	500
	24.8%	2.3%	1.3%	3.4%	66.2%	2.0%	100%
Ingersoll (T) O***	1,489.6	90.5	237	45.2		179.7	2,042
	72.9%	4.4%	11.6%	2.2%		8.8%	100%
Mitchell (T) P	468	38	116		739	63	1,424
	32.9%	2.7%	8.1%		51.9%	4.4%	100%
Ridgetown (T) K	299	26	60	166	406	16	973
	30.7%	2.7%	6.2%	17.1%	41.7%	1.6%	100%
Tilbury (T) K	416	74	66	44	575	52	1,227
	33.9%	6.0%	5.4%	3.6%	46.9%	4.2%	100%

* gross acres include area devoted to roads
** existing land-use for 1965, therefore before the 1967 annexation of about 1,600 ac.
*** existing land-use for 1966, therefore before the 1970 annexation of about 747 ac.

TABLE 9:

RESIDENTIAL DENSITIES
FOR SELECTED URBAN MUNICIPALITIES - 1971

Municipality	1971 Population	Existing Residential Area in Gross Acres	Residential Density (Persons/Acre)
London(C) M	219,921	12,324	17.9
Chatham(C) K	33,671	2,059	16.4
Woodstock(C) O	25,081	1,712	14.7
Stratford(C) P	23,380	988	23.7
Blenheim(T) K	3,431	313	11.0
Bothwell(T) K	813	124	6.6
Ingersoll(T) O	7,755	1,490	5.2
Mitchell(T) P	2,553	466	5.5
Ridgetown (T) K	2,826	299	9.5
Tilbury(T) K	3,613	416	8.7

Source: 1972 Municipal Directory, TEIGA
Land-use Plans for Urban Municipalities

Housing

London: In examining the existing housing situation, the City of London, having the largest population, dominates all other centres in the Thames River watershed. According to the 1971 Census, London had a total of 69,130 dwelling units, representing 65 percent of the total number of dwelling units found in all urban municipalities in the watershed. Single detached houses accounted for 56.1 percent of this total, or 38,795 dwelling units, while apartments and flats comprised 35.3 percent of the total, representing 74 percent of all such dwelling units found in the urban centres of the watershed. Making up the balance of living quarters in London are single attached dwellings, 6.4 percent of the total, and mobile homes, a scant 0.4 percent of the total. With regard to tenure, 55.9 percent of London's dwellings are owned, which is below the comparative provincial percentage of owned dwellings, with the remaining dwellings being rented. With a total of about 69,215 households, London had an average density of 3.1 persons per household in 1971.

Chatham: In 1971, the City of Chatham contained 10,525 dwelling units. Single detached houses comprised 67.1 percent of this total while apartments and flats accounted for 26.2 percent of the total. About 6.4 percent of Chatham's dwellings can be classified as single attached while a marginal 0.3 percent of the total comprised mobile homes. A total of 10,545 households resulted in an average density of 3.2 persons/household.

Stratford

The City of Stratford contained 7,625 dwelling units in 1971. Single detached homes comprised 66.7 percent of this total. The second most common type of dwelling was the apartment or flat, accounting for 28 percent of the total. The remaining dwelling units were comprised of single attached units (5.2%) and mobile homes (0.1%). About 65.5 percent of Stratford's dwellings were owned in 1971, which is above the provincial figure of 62.9 percent. With 7,630 households, Stratford had an average density of 3.1 persons per household.

Woodstock: In 1971, the City of Woodstock contained 7,935 dwelling units with 64.6 percent of the total consisting of single detached houses. Apartments and flats accounted for 22.7 percent of the total while the balance (12.7%) consisted of single attached units. There were no mobile homes. About two-thirds of Stratford's dwellings are owned, the remaining being rented. In 1971, a total of 7,955 households in Woodstock resulted in an average density of 3.2 persons/household.

TABLE 10:

HOUSING CHARACTERISTICS FOR SELECTED URBAN CENTRES - TYPES OF DWELLING UNITS - 1971

		TYPE OF DWELLING							
Centre Cities	Total	Single Detached	% of Total	Single Attached	% of Total	Apartment or Flat	% of Total	Mobile	% of Total
London(M)	69,130	38,795	56.1	5,670	8.2	24,400	35.3	260	0.4
Chatham(K)	10,525	7,060	67.1	680	6.4	2,755	26.2	30	0.3
Stratford(P)	7,625	5,085	66.7	390	5.2	2,135	28.0	10	0.1
Woodstock(O)	7,935	5,130	64.6	1,010	12.7	1,800	22.7	-	-
Towns									
Blenheim(K)	1,125	895		50		180			
Bothwell(K)	280	240		10		30			
Ingersoll(O)	2,430	1,675		245		510			
Mitchell(P)	875	675		45		155			
Ridgetown(K)	960	795		35		130			
St. Marys (P)	1,530	1,145		60		320		5	
Tilbury(K)	1,075	855		55		160		5	
Villages									
Beachville(O)	300	245		20		30		5	
Embro(O)	220	185		10		25			
Glencoe(M)	485	400		35		45		5	
Highgate(K)	135	130				5			
Tavistock(O)	450	380		25		45			
Thamesville(K)	350	280		15		55			
Wardsville(M)	140	120		10		5		5	
Province			61.4		11.1		27.1		0.4
Metro Toronto			40.7		18.7		35.8		0.0

TABLE 11: DWELLING UNITS BY TENURE: 1971

Centre	Total	TENURE Owned	% of Total	Rented	% of Total
Cities					
London (M)	69,130	38,630	55.9	30,500	44.1
Chatham (K)	10,525	6,790	64.5	3,740	35.5
Stratford (P)	7,625	4,995	65.5	2,635	34.5
Woodstock (O)	7,935	5,235	66.0	2,700	34.0
Towns					
Blenheim (K)	1,125	830		295	
Bothwell (K)	280	230		50	
Ingersoll (O)	2,430	1,710		720	
Mitchell (P)	875	675		220	
Ridgetown (K)	960	735		225	
St. Marys (P)	1,530	1,115		410	
Tilbury (K)	1,075	820		250	
Villages					
Beachville (O)	300	245		50	
Embro (O)	220	195		25	
Glencoe (M)	485	370		115	
Highgate (K)	135	115		20	
Tavistock (O)	450	385		65	
Thamesville (K)	350	265		85	
Wardsville (M)	140	110		25	
Province			62.9		37.1
Metro Toronto			51.0		49.0

TABLE 12: HOUSEHOLD CHARACTERISTICS: 1971

Centre	HOUSEHOLDS Total	Average number of Persons/Household
Cities		
London (M)	69,215	3.1
Chatham (K)	10,545	3.2
Stratford (P)	7,630	3.1
Woodstock (O)	7,955	3.2
Towns		
Blenheim (K)	1,124	3.1
Bothwell (K)	280	2.9
Ingersoll (O)	2,428	3.2
Mitchell (P)	876	2.8
Ridgetown (K)	962	2.9
St. Marys (P)	1,531	3.0
Tilbury (K)	1,073	3.3
Villages		
Beachville (O)	300	3.3
Embro (O)	220	3.1
Glencoe (M)	486	2.8
Highgate (K)	140	3.1
Tavistock (O)	451	2.9
Thamesville (K)	354	2.8
Wardsville (M)	140	2.5
Province		3.4
Metro Toronto		3.2

Source: 1971 Census of Canada:

Bulletins 93-743, December 1972
93-744, December 1972
Catalogue 93-702, Vol. II pt.I, May 1973,
1971 Census of Canada, Computer

Rural and Agricultural

General: Southwestern Ontario is an important provincial farming area. Good climatic, soil, and topographic conditions, as well as highly efficient farming practices, have enabled the agricultural industry to become a major component of the Region's economic base. The Thames River constitutes the backbone of this highly productive agricultural land.

The Thames River Region includes the entire areas of the 48 rural townships. Table 13 displays a broad breakdown of estimated rural land-use for the Thames River Region. The table indicates that dominant use of rural land is that of farming. Farmland comprises over 90% of the region's rural land. Most of the farmland can be classified as 'improved' land. This includes:

- productive land that is used for crops
- improved pasture
- summer fallow
- other uses (defined by the Canada Census)

It is estimated that the Thames River Region contains over 2,100,000 acres of farmland and has about 18% of Ontario's total improved or cultivated farmland. Agricultural activity is diversified and includes dairying, selected field crops, fruits, vegetables, and tobacco. Yet these activities each can appear in high concentrations in certain areas:

Dairy farming	-	Oxford County and eastern parts of Middlesex
Tobacco farming	-	Elgin County (eastern)
Mixed farming	-	Perth and Middlesex Counties
Corn, Soybeans, Wheat and cannery crops such as tomatoes and peaches	-	Kent and Essex (eastern) Counties
Livestock raising	-	Huron (eastern) and Perth Counties

Trends: Table 14 displays agricultural land-use for the years 1961 and 1971. An immediate observation is the relative stability of the total area of farmland over the decade. In this period, total farmland declined by only 2.95%, or about 67,366 acres. In 1971 there were 2,215,108 acres of farmland[1]. The comparative provincial figures showed a decline of 10.9% in total farmland.

[1]*This figure is slightly larger than the similar figure of Table 13 due to the Canada Census method of recording areas of census farms, and is greater than the actual agricultural area. For the census, the total area of a farm is attributed only to the township where the headquarters of the operator is located.*

TABLE 13: ESTIMATED RURAL LAND USE (IN ACRES THAMES RIVER REGION*

Township	Farmland			Hamlets, Roads, Other Lands	Total
	Improved	Unimproved	Total		
Aldborough El.	53,832	15,350	69,182	224,877	56,764
Dorchester S.El.	25,559	2,661	28,220	2,007	30,227
Dunwich El.	46,020	12,722	58,742	10,249	68,991
Southwold El.	54,430	11,954	66,834	5,561	72,395
Mersea Ex.	52,443	2,886	55,329	3,053	58,382
Tilbury N.Ex.	23,301	539	23,840	2,796	26,636
Tilbury W.Ex.	20,389	574	20,963	2,058	23,021
Grey H.	46,858	11,990	58,848	4,524	63,372
McKillop H.	44,870	4,501	49,371	3,318	52,689
Usborne H.	40,865	4,018	44,883	3,203	41,680
Camden K.	35,602	3,544	39,146	2,073	41,219
Chatham K.	71,723	5,475	77,198	7,738	84,936
Dover K.	55,258	7,612	62,870	6,302	69,172
Harwich K.	80,893	5,075	85,968	4,122	90,090
Howard K.	50,867	4,303	55,170	5,705	60,875
Orford K.	37,386	6,337	43,723	7,562	51,285
Raleigh K.	62,136	2,249	64,385	5,861	70,246
Romney K.	23,260	862	24,122	2,021	26,143
Tilbury E.K.	49,108	909	50,017	4,191	54,208
Zone K.	16,513	4,833	21,346	6,489	27,835
Biddulph M.	34,651	4,300	38,951	1,262	40,313
Caradoc M.	44,278	13,702	57,980	18,812	76,792
Delaware M.	17,022	3,892	20,914	9,394	30,308
Dorchester N.M.	37,770	7,276	45,046	9,158	54,204
Ekfrid M.	39,535	10,856	50,391	4,251	54,642
Lobo M.	31,462	7,505	38,967	9,227	48,194
London M.	63,990	10,569	74,559	8,808	83,367
Mosa M.	31,242	9,000	40,242	9,462	49,704
Nissouri W.M.	39,235	5,057	44,292	5,938	50,230
Westminster M.	37,418	5,793	43,211	3,874	47,085
Blandford O.	18,496	4,117	22,613	6,562	29,175
Dereham O.	52,122	6,980	59,102	5,694	64,796
Nissouri E. O.	36,387	5,290	41,677	4,923	46,600
Norwich N.O.	26,233	4,036	30,269	2,689	32,958
Oxford E.O.	26,893	2,737	29,630	2,145	31,775
Oxford N.O.	15,760	3,212	18,972	1,991	20,963
Oxford W.O.	19,410	2,532	21,942	2,558	24,500
Zorra E.O.	50,424	5,274	55,698	1,066	56,764
Zorra W.O.	43,121	7,787	50,908	4,120	55,028
Blanshard P.	38,541	4,674	43,215	2,726	45,941
Downie P.	40,042	5,769	45,811	1,622	47,433
Easthope N.P.	34,307	5,834	40,141	2,942	43,083
Easthope S.P.	19,366	2,096	21,462	2,803	24,265
Ellice P.	44,757	5,101	49,858	4,375	54,233
Fullarton P.	36,125	4,345	40,470	1,555	42,025
Hibbert P.	34,173	4,775	38,948	2,332	41,280
Logan P.	48,571	4,186	52,757	3,338	56,095
Mornington P.	42,388	4,388	46,776	3,124	49,900
Total	1,895,032	269,927	2,164,959	224,877	2,389,836
Percent	79.30%	11.29%	90.59%	9.41%	100.00%

Note: *The entire areas of townships lying totally or partially within the watershed have been used for the above Table.

Source: Township areas are 1971 figures produced by the Municipal Finance Branch, TEIGA.

Farmland area are estimates based on 1971 Census of Canada; Agriculture Ontario; Vol.IV, Part 2 (Bull.4.2.2)

TABLE 14: TRENDS IN AGRICULTURAL LAND USES IN THE THAMES RIVER REGION*

Township		1961 FARMLAND (Acres)			1971 FARMLAND (Acres)			PERCENTAGE CHANGE 1961 - 1971		
		Improved	Unimproved	Total	Improved	Unimproved	Total	Improved	Unimproved	Total
Aldborough	E	49,899	17,755	67,654	53,832	15,350	69,182	7.88%	13.55%	2.26%
Dorchester S.	E	27,452	3,345	30,797	25,559	2,661	28,220	- 6.90	-20.45	- 8.35
Dunwich	E	45,992	15,797	61,789	46,020	12,722	58,742	+ 0.06	-19.47	- 4.93
Southwold	E	56,277	12,808	69,085	54,880	11,954	66,834	- 3.20	- 6.67	- 3.26
Mersea	EX	53,681	4,585	58,266	52,443	2,886	55,329	- 2.31	-37.06	- 5.04
Tilbury N.	EX	23,901	791	24,692	23,301	539	23,840	- 2.51	-31.86	- 3.45
Tilbury W.	EX	19,931	943	20,874	20,389	574	20,963	+ 2.30	-39.13	+ 0.43
Grey	H	48,847	12,974	61,821	46,858	11,990	58,848	- 4.07	- 7.58	- 4.81
McKillop	H	45,629	5,412	51,041	44,870	4,501	49,371	- 1.66	-16.83	- 3.27
Usborne	H	40,803	3,528	44,331	40,865	4,018	44,883	+ 0.15	-13.89	+ 1.25
Camden	K	34,917	6,782	41,699	35,602	3,544	39,146	+ 1.96	-47.74	- 6.12
Chatham	K	81,450	7,872	89,322	87,833	5,475	93,308	+ 7.84	-30.44	+ 4.46
Dover	K	62,104	4,319	66,423	70,255	7,612	77,687	+13.12	+76.24	+17.23
Harwich	K	78,333	8,095	86,428	80,893	5,075	85,968	+ 3.27	-37.31	- 0.53
Howard	K	49,733	6,399	56,132	50,867	4,303	55,170	+ 2.28	-32.76	- 1.73
Orford	K	37,410	9,425	46,835	37,386	6,337	43,723	- 0.06	-32.76	- 6.64
Raleigh	K	63,087	5,954	69,041	62,136	2,249	64,385	- 1.51	-62.23	- 6.74
Romney	K	24,381	1,513	25,894	24,705	862	25,567	+ 1.33	-43.03	- 1.26
Tilbury E.	K	50,777	3,343	54,120	52,422	909	53,331	+ 3.24	-72.81	- 1.46
Zone	K	15,259	5,399	20,658	16,513	4,833	21,346	+ 8.23	-10.48	+ 3.33
Biddulph	M	35,716	3,627	39,343	34,651	4,300	38,951	- 2.98	+18.56	- 1.00
Caradoc	M	42,688	25,277	67,965	44,278	13,702	57,980	+ 3.72	-45.79	-14.69
Delaware	M	17,737	4,080	21,817	17,022	3,892	20,914	- 4.03	- 4.61	- 4.14
Dorchester N.	M	37,864	8,388	46,252	37,770	7,276	45,046	- 0.25	-13.26	- 2.61
Ekfrid	M	38,815	13,581	52,396	39,535	10,856	50,391	+ 1.85	-20.06	- 3.83
Lobo	M	36,411	8,628	45,039	31,462	7,505	38,967	-13.59	-13.02	-13.48
London	M	64,963	16,932	81,895	63,990	10,569	74,559	- 1.50	-37.58	- 8.96
Mosa	M	26,640	12,655	39,295	31,242	9,000	40,242	+17.27	-28.88	+ 2.41
Nissouri W	M	39,747	6,489	46,236	39,235	5,057	44,292	- 1.16	-22.06	- 4.20
Westminster	M	39,474	6,341	45,815	37,418	5,793	43,211	- 5.21	- 8.64	- 5.68
Blandford	O	20,517	6,110	26,627	18,496	4,117	22,613	- 9.85	-32.62	-15.07
Dereham	O	54,311	8,488	62,799	52,122	6,980	59,102	- 4.03	-17.77	- 5.89
Nissouri E.	O	38,566	6,628	45,194	36,387	5,290	41,677	- 5.65	-20.19	- 7.78
Norwich N.	O	29,905	4,227	34,132	33,428	4,036	37,464	+11.78	- 4.52	+ 9.76
Oxford E.	O	27,858	4,199	32,057	26,893	2,737	29,630	- 3.46	-34.82	- 7.57
Oxford N.	O	17,697	3,760	21,457	17,657	3,212	20,869	- 0.23	-14.57	- 2.74
Oxford W.	O	19,962	3,029	22,991	19,410	2,532	21,942	- 2.77	-16.41	- 4.56
Zorra E.	O	49,786	7,090	56,876	50,424	5,274	55,698	+ 1.28	-25.61	- 2.07
Zorra W.	O	44,307	9,108	53,415	43,121	7,787	50,908	- 2.68	-14.50	- 4.69
Blanshard	P	40,675	5,132	45,807	38,541	4,674	43,215	- 5.25	- 8.92	- 5.66
Downie	P	42,754	4,596	47,350	40,042	5,769	45,811	- 6.34	+25.52	- 3.25
Easthope N.	P	35,233	6,082	41,315	34,307	5,834	40,141	- 2.63	- 4.08	- 2.84
Easthope S.	P	20,218	2,383	22,601	19,366	2,096	21,462	- 4.21	-12.04	- 5.04
Ellice	P	46,727	3,870	50,597	44,757	5,101	49,858	- 4.23	+31.81	- 1.46
Fullarton	P	35,585	4,591	40,176	36,125	4,345	40,470	+ 1.52	- 5.36	+ 0.73
Hibbert	P	34,425	5,801	40,226	34,173	4,775	38,948	- 0.73	-17.69	- 3.18
Logan	P	52,024	3,812	55,836	51,544	4,186	55,730	- 0.92	+ 9.81	- 0.19
Mornington	P	45,918	4,145	50,063	44,606	4,388	48,994	- 2.86	+ 5.86	- 2.14
Total:		1,946,386	336,088	2,282,474	1,945,631	269,477	2,215,108	- 0.04	-19.82	- 2.95

* Note: Acreage figures are for the Townships' entire areas

** Unimproved farmland includes: woodland (woodlots, land leased for cutting, sugar bush and cut over land having future value as timber, fuelwood and Christmas trees), native pasture or hay land that has not been cultivated, brush pasture, grazing or wasteland, sloughs, marsh, and rocky land etc.

Source: 1971 Census of Canada; Agriculture Ontario; Vol. IV, Part 2 (Bulletin 4.2-2)

1961 Census of Canada; Agriculture Ontario.

E = Elgin
EX = Essex
H = Huron
K = Kent
M = Middlesex
O = Oxford
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More importantly, over the same period, the area of improved farmland decreased by an insignificant 0.04% and 'unimproved' farmland by 19.8% revealing that most of the decline of total farmland acreage derived from decreases in unimproved land. The slight decline in improved farmland may be attributed to the conversion of unimproved into improved farmland thereby offsetting any real loss of improved farmland acreage. Moreover, intensified farming practices, in the form of double-cropping, may also have inflated improved farmland acreage since a field having two different crop harvests in one year will be counted twice by the Canada Census in the compilation of cropland acreages.

Decreases in total farmland have occurred primarily in townships experiencing urban encroachment of several forms. Townships adjacent to some urban centres have lost farmland due to annexations within the period of 1961-1971. For example, in 1967, Stratford annexed about 1,600 acres, Woodstock over 640 acres and, in 1970, Ingersoll incorporated over 740 acres. Other areal expansions of urban municipalities included London, Tilbury, and Ingersoll in 1967, Bothwell, Tilbury, and Blenheim in 1968, Tavistock in 1969, and Chatham in 1970. The total effect of these annexations were reduced acreages of total farmland in the surrounding rural townships. Hobby farming may have contributed to farmland reduction either in the form of additional house lots, or in land speculation with its accompanying increase in land values in the "urban fringes". Similar to these activities is "strip" development along highways, which has also contributed to land being taken out of agriculture, and to an increase in rural non-farm population.

Table 15 displays the breakdown of usage for improved farmland. Between 1961 and 1971, every township showed increases in acreage under crops, giving an aggregate increase of 13.2%. Concurrently, all other land-use categories showed aggregate declines for the decade: pasture by 40.3%, summer fallow by 28.9% and 'other' by 17.3%. Clearly, the trend has been toward increasing crop acreages, perhaps even at the expense of the other uses of improved farmland.

Rural out-migration of farm population has been a well known phenomenon in western countries in recent years, and the Thames River Region is no exception to this occurrence. Agricultural employment opportunities have declined because of farm consolidation, mechanization, and part-time farming. Concurrently, urban centres offer more amenities, job opportunities, and greater earnings for the young. Out-migration is represented by declines in farm population, decreases in the number of farms, and an increase in the average size of the remaining farms (Tables 16, 17 and 18).

TABLE 15: TRENDS IN IMPROVED FARMLAND USAGE IN THE THAMES RIVER REGION

Township		1961 Improved Farmland (Acres) Under Crops	Pasture	Summer Fallow	Other*	1971 Improved Farmland (Acres) Under Crops	Pasture	Summer Fallow	Other
Aldborough	E	35,131	10,541	1,943	2,284	45,715	5,418	845	1,854
Dorchester S.	E	19,701	6,400	550	801	21,683	2,885	271	720
Dunwich	E	30,139	13,418	830	1,605	34,372	9,439	700	1,509
Southwold	E	39,625	13,251	1,024	2,377	44,698	7,349	791	2,042
Mersea	EX	47,798	2,322	628	2,933	49,796	354	354	1,939
Tilbury N.	EX	21,936	1,011	303	651	22,580	155	74	492
Tilbury W.	EX	18,397	885	139	510	19,685	271	3	430
Grey	H	26,563	20,865	136	1,283	30,630	14,668	111	1,449
McKillop	H	29,845	14,456	204	1,124	34,629	9,008	159	1,074
Usborne	H	26,444	12,979	343	1,037	34,970	4,591	256	1,048
Camden	K	29,944	3,494	294	1,185	32,674	1,988	68	872
Chatham	K	73,033	5,895	421	2,101	82,727	3,345	111	1,650
Dover	K	57,514	2,466	111	2,013	65,925	2,997	15	1,318
Harwich	K	69,100	6,470	332	2,431	74,363	4,323	433	1,774
Howard	K	43,632	4,058	401	1,642	46,544	2,792	142	1,389
Orford	K	29,846	5,313	760	1,491	33,398	2,721	99	1,168
Raleigh	K	57,872	2,859	269	2,087	59,453	1,095	107	1,481
Romney	K	22,762	851	245	523	24,156	179	70	300
Tilbury E	K	47,772	1,236	634	1,235	51,071	247	436	668
Zone	K	12,094	1,680	701	784	14,171	1,542	344	456
Biddulph	M	20,297	14,135	399	885	25,833	7,767	239	812
Caradoc	M	26,491	11,095	2,680	2,422	31,251	7,055	3,291	2,681
Delaware	M	10,641	6,028	272	796	13,309	2,749	234	730
Dorchester N.	M	25,341	10,261	563	1,699	30,084	5,653	553	1,480
Ekfrid	M	22,929	14,297	489	1,100	27,264	10,396	499	1,376
Lobo	M	20,404	14,517	293	1,197	23,062	6,474	607	1,319
London	M	41,698	19,495	1,053	2,717	48,351	12,592	667	2,380
Mosa	M	18,534	6,044	914	1,148	24,947	5,054	397	844
Nissouri W.	M	26,722	11,070	555	1,400	30,317	7,227	335	1,356
Westminster	M	25,714	11,392	665	1,703	29,100	6,496	471	1,351
Blandford	O	14,581	4,466	638	832	15,427	1,952	382	735
Dereham	O	36,895	13,322	1,146	2,948	43,220	6,245	634	2,023
Nissouri E.	O	23,929	13,105	152	1,380	27,632	7,564	168	1,023
Norwich N.	O	22,309	5,089	1,180	1,327	29,251	2,422	716	1,039
Oxford E.	O	20,665	5,703	149	1,071	23,583	2,395	66	849
Oxford N.	O	12,283	4,464	217	733	13,771	3,304	7	575
Oxford W.	O	14,231	4,746	114	871	15,701	3,112	10	587
Zorra E.	O	37,379	10,326	310	1,771	43,186	5,681	175	1,382
Zorra W.	O	28,892	13,425	338	1,652	32,510	9,350	173	1,088
Blanshard	P	25,697	13,027	453	1,498	29,845	7,070	367	1,259
Downie	P	28,886	12,282	291	1,295	30,621	7,843	451	1,127
Easthope N.	P	25,296	8,574	375	988	26,964	6,030	436	877
Easthope S.	P	14,919	4,452	288	559	15,371	3,299	171	525
Ellice	P	32,502	13,333	604	1,288	34,315	8,985	416	1,041
Fullarton	P	24,060	10,062	364	1,099	28,223	6,568	242	1,092
Hibbert	P	23,105	10,148	188	984	26,968	6,097	192	916
Logan	P	33,253	16,850	395	1,526	39,176	10,816	299	1,253
Mornington	P	33,285	10,849	452	1,332	35,670	7,001	764	1,171
TOTAL		1,429,086	422,907	25,805	68,318	1,618,192	252,564	18,351	56,524
Percentage CH.						+13.2%	-40.3%	-28.9%	-17.3%

* OTHER refers to area of barnyards, home gardens, lanes, and roads on census farms, plus areas of cultivated land that were lying idle, being neither summer-fallowed nor cropped, and areas of new breaking that had not been seeded to crop.

Source: 1971 Census of Canada; Agriculture Ontario; Vol.IV, Pt.2 (Bulletin 4.2-2)
1961 Census of Canada; Agriculture, Ontario.

E = Elgin
EX = Essex
H = Huron
K = Kent
M = Middlesex
O = Oxford
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TABLE 16: FARM POPULATION AND AVERAGE FARM SIZE: THAMES RIVER REGION: 1961

Township		Total Farm Population	Percentage of Total Municipality Population Living on Farms	Average Number of Persons per Farm
Aldborough	E	2,062	69.2	3.9
Dorchester S.	E	1,042	71.4	4.2
Dunwich	E	1,590	72.9	3.8
Southwold	E	1,960	53.0	4.3
Mersea	EX	4,132	53.6	3.8
Tilbury N.	EX	1,143	52.0	4.5
Tilbury W.	EX	678	42.6	3.9
Grey	H	1,589	83.9	4.0
McKillop	H	1,268	75.8	3.8
Usborne	H	1,086	71.3	3.6
Camden	K	1,610	69.8	4.0
Chatham	K	3,260	39.3	4.0
Dover	K	2,408	52.9	4.2
Harwich	K	2,973	46.1	3.8
Howard	K	1,765	61.8	3.9
Orford	K	1,238	71.0	3.8
Raleigh	K	2,363	45.3	3.9
Romney	K	782	49.1	3.6
Tilbury E.	K	1,536	53.5	3.7
Zone	K	613	54.5	3.9
Biddulph	M	1,153	63.8	4.3
Caradoc	M	2,007	46.8	4.3
Delaware	M	725	40.7	4.3
Dorchester N.	M	1,615	30.1	4.1
Ekfrid	M	1,184	62.3	3.5
Lobo	M	1,231	47.5	3.7
London	M	4,474	83.1	6.5
Mosa	M	880	64.0	3.0
Nissouri W.	M	1,607	54.9	4.1
Westminster	M	1,759	30.0	4.6
Blandford	O	984	65.5	4.6
Dereham	O	2,191	50.9	4.4
Nissouri E.	O	1,625	55.8	4.4
Norwich N.	O	1,309	57.1	4.1
Oxford E.	O	1,368	56.9	4.7
Oxford N.	O	784	50.4	4.2
Oxford W.	O	1,006	36.4	4.9
Zorra E.	O	2,375	59.3	4.7
Zorra W.	O	1,749	82.0	4.4
Blanshard	P	1,465	76.7	3.9
Downie	P	1,584	62.4	4.2
Easthope N.	P	1,401	65.2	4.4
Easthope S.	P	1,034	64.9	4.7
Ellice	P	1,886	69.5	4.3
Fullarton	P	1,270	79.9	4.0
Hibbert	P	1,095	68.7	3.8
Logan	P	1,845	83.0	4.1
Mornington	P	1,864	75.1	4.4
TOTAL		78,568	56.1	4.0

E = Elgin
EX = Essex
H = Huron
K = Kent
M = Middlesex
O = Oxford
P = Perth

Source: 1961 Census of Canada; Agriculture Ontario Ontario Population Statistics; Dept. of Municipal Affairs: 1970.

TABLE 17: FARM POPULATION AND AVERAGE FARM SIZE: THAMES RIVER REGION: 1971

Township		Total Farm Population	Percentage of Total Municipality Population Living on Farms	Average Number of Persons per Farm
Aldborough	E	1,779	57.3%	3.9
Dorchester S.	E	867	55.9	4.4
Dunwich	E	1,342	59.4	3.7
Southwold	E	1,625	37.7	4.3
Mersea	EX	3,654	41.2	4.0
Tilbury N.	EX	933	34.6	4.4
Tilbury W.	EX	555	32.0	4.0
Grey	H	1,300	69.1	4.0
McKillop	H	1,189	76.4	4.1
Usborne	H	1,002	62.5	3.9
Camden	K	1,136	45.6	3.6
Chatham	K	2,687	37.5	4.1
Dover	K	1,808	41.7	4.0
Harwich	K	2,704	40.4	4.1
Howard	K	1,487	55.0	4.0
Orford	K	1,029	62.7	4.0
Raleigh	K	1,717	31.2	3.8
Romney	K	549	31.3	3.6
Tilbury E.	K	1,127	38.7	3.7
Zone	K	486	44.3	3.7
Biddulph	M	929	45.8	3.9
Caradoc	M	1,750	32.8	4.2
Delaware	M	592	29.4	4.6
Dorchester N.	M	1,419	22.2	4.4
Ekfrid	M	1,007	51.9	3.4
Lobo	M	1,043	28.0	4.0
London	M	1,880	31.0	3.7
Mosa	M	740	55.4	3.3
Nissouri W.	M	1,285	40.5	4.0
Westminster	M	1,271	19.3	4.1
Blandford	O	686	47.8	4.4
Dereham	O	1,957	37.1	4.5
Nissouri E.	O	1,264	37.4	4.1
Norwich N.	O	1,312	51.6	4.5
Oxford E.	O	992	44.3	4.4
Oxford N.	O	626	34.6	4.4
Oxford W.	O	786	26.5	4.5
Zorra E.	O	1,860	41.8	4.4
Zorra W.	O	1,537	69.5	4.4
Blanshard	P	1,185	60.6	3.9
Downie	P	1,274	51.4	3.9
Easthope N.	P	1,267	58.2	4.3
Easthope S.	P	759	41.8	4.3
Ellice	P	1,496	52.6	4.2
Fullarton	P	1,104	70.9	4.2
Hibbert	P	919	59.1	3.9
Logan	P	1,545	68.6	4.6
Mornington	P	1,676	61.5	4.6
		63,137	42.1	4.1

E = Elgin
EX = Essex
H = Huron
K = Kent
M = Middlesex
O = Oxford
P = Perth

Source: 1971 Census of Canada; Agriculture, Ontario; Vol. 4, Part 2.
1972 Ontario Municipal Directory.

TABLE 18: TRENDS IN THE NUMBER OF FARMS AND AVERAGE FARM SIZE: THAMES RIVER REGION

Township		Number of Farms		Percentage Change	Area of Farmland (In Acres)		Average Farm Size	
		1961	1971	1961 - 1971	1961	1971	1961	1971
Aldborough	E	532	457	-14.1%	67,654	69,182	127.2	151.4
Dorchester S.	E	247	195	-21.1	30,797	28,220	124.7	144.2
Dunwich	E	423	365	-13.7	61,789	58,742	146.1	160.9
Southwold	E	451	380	-15.7	69,085	66,834	153.2	175.9
Mersea	EX	1,100	912	-17.1	58,266	55,329	53.0	60.7
Tilbury N.	EX	255	213	-16.5	24,692	23,840	96.8	111.9
Tilbury W.	EX	176	140	-20.5	20,874	20,963	118.6	149.7
Grey	H	398	327	-17.8	61,821	58,848	155.3	180.0
McKillop	H	334	292	-12.6	51,041	49,371	152.8	169.1
Usborne	H	302	259	-14.2	44,331	44,883	146.8	173.3
Camden	K	400	317	-20.8	41,699	39,146	104.2	123.5
Chatham	K	820	656	-20.0	89,322	93,308	108.9	142.2
Dover	K	568	454	-20.1	66,423	77,867	116.9	171.5
Harwich	K	790	653	-17.3	86,428	85,968	109.4	131.7
Howard	K	452	376	-16.8	56,132	55,170	124.2	146.7
Orford	K	329	256	-22.2	46,835	43,723	142.4	170.8
Raleigh	K	601	447	-25.6	69,041	64,385	114.9	144.0
Romney	K	220	152	-30.9	25,894	25,567	117.7	168.2
Tilbury E.	K	413	304	-26.4	54,120	53,331	131.0	175.4
Zone	K	158	133	-15.8	20,658	21,346	130.7	160.5
Biddulph	M	266	241	- 9.4	39,343	38,951	147.9	161.6
Caradoc	M	467	415	-11.1	67,965	57,980	145.5	139.7
Delaware	M	168	129	-23.2	21,817	20,914	129.9	162.1
Dorchester N.	M	397	319	-19.6	46,252	45,046	116.5	141.2
Ekfrid	M	339	297	-12.4	52,396	50,391	154.6	169.7
Lobo	M	329	258	-21.6	45,039	38,967	136.9	151.0
London	M	686	512	-25.4	81,895	74,559	119.4	145.6
Mosa	M	294	226	-23.1	39,295	40,242	133.7	178.1
Nissouri W.	M	395	318	-19.5	46,236	44,292	117.1	139.3
Westminister	M	381	310	-18.6	45,815	43,211	120.2	139.4
Blandford	O	212	156	-26.4	26,627	22,613	125.6	145.0
Dereham	O	500	436	-12.8	62,799	59,102	124.6	135.6
Nissouri E.	O	368	309	-16.0	45,194	41,677	133.8	134.9
Norwich N.	O	317	289	- 8.8	34,132	37,464	107.7	129.6
Oxford E.	O	294	227	-22.8	32,057	29,630	109.0	130.5
Oxford N.	O	185	142	-23.2	21,457	20,869	116.0	146.9
Oxford W.	O	205	173	-15.6	22.991	21,942	112.2	126.8
Zorra E.	O	506	427	-15.6	56,876	55,698	112.4	130.4
Zorra W.	O	395	348	-11.9	53,415	50,908	135.2	146.3
Blanshard	P	374	301	-19.4	45,807	43,215	122.5	143.6
Downie	P	378	323	-14.6	47,350	45,811	125.3	141.8
Easthope N.	P	322	294	- 8.7	41,315	40,141	128.3	136.2
Easthope S.	P	219	177	-19.2	22,601	21,462	103.2	121.3
Ellice	P	435	356	-18.2	50,597	49,858	116.3	140.1
Fullarton	P	320	264	-17.5	40,176	40,470	125.6	153.3
Hibbert	P	287	233	-18.8	40,226	38,948	140.2	167.2
Logan	P	453	366	-19.2	55,836	55,730	123.3	152.3
Mornington	P	425	367	-13.6	50,063	48,994	117.7	133.5
		19,788	15,501	-21.7	2,282,474	2,215,108	115.3	142.9

E = Elgin
EX = Essex
H = Huron
K = Kent
M = Middlesex
O = Oxford
P = Perth

Source: 1961 Census of Canada, Agriculture, Ontario.
1971 Census of Canada, Agriculture, Ontario; Vol. IV, Part 2 (Bulletin 4.2-2)

In 1961, 78,568 or 56.1% of the total population of the townships resided on farms. By 1971, the comparative figures were 63,137 representing 42.1%. Total number of farms for the area also declined by 21.7% while, indicative of farms consolidation, average farm size increases from 115.3 to 142.9 acres. For the ten year period, these trends were seen in virtually every one of the 48 townships.

Summary

The Thames River Region between 1961 and 1971 proved to be fairly stable in terms of total farmland acreage. The relatively small decline that was experienced was mainly due to the various forms of urban encroachment, a phenomenon not unique to the Region. However, the decline of the more important improved farmland sector has been almost nil, and acreage devoted to crops has increased in virtually every township. It appears that unimproved farmland has borne the brunt of any non-agricultural expansion and by conversion, has also offset any real decline in improved farmland.

It is apparent that as the rural farm population and number of farms decline, the number of rural non-farm people is increasing in the Thames River Region. This could result in higher costs for the rural farm population or could lead to inadequate servicing of water and sewage mains and to possible sources of pollution problems.

One favourable agricultural trend in the Region is that of farm consolidation in which the remaining farms have absorbed marginal operations in an effort to become more viable and efficient units of production.

2.2 RECREATION RESOURCES

Public Open Space and Facilities: There are no provincial or national parks located in the Thames River watershed. However, being almost surrounded by the Great Lakes, the residents of the watershed are within easy access to many well known provincial parks. These important lakeshore parks with their camping and other forms of public recreation, are indeed widely used by the watershed residents.

Located on the eastern shore of Lake Huron is the large Pinery (5,250 acres) and the smaller Ipperwash Provincial Parks. Pinery, a "natural environment" park, is well known for its sand-dune formations and attracted more visitors and campers in 1971 than any other provincial park in Ontario. On the Lake St.Clair shoreline in north-west Tilbury North Township is the "day-use Tremblay Beach Provincial Park, currently under development.

The north Lake Erie shoreline has several accessible provincial parks including Wheatley, Rondeau, J.E. Pearce and further to the east, Port Bruce, Iroquois Beach, and Turkey Point. Rondeau, having 11,454 acres of open space, is especially noted for its "Carolinian" flora and fauna, and offers additional facilities such as a bird migration observation point, a museum and interpretive programme, and waterfowl hunting in season.

The only national park near the watershed is the famous Point Pelee (3,840 acres) in southeastern Essex. Here is located a deep fresh-water marsh, an animal and bird sanctuary, waterfowl hunting in season, a museum, canoeing, row boating facilities, and skating on frozen winter ponds.

However, within the Thames River watershed, 9,352.5 acres of public open space fall under the jurisdiction of two Conservation Authorities: The Upper Thames and the Lower Thames.

In the Lower Thames, there are 8 conservation areas totalling 483 acres. Table 19 describes the location and size of these areas. Total acreage under the Lower Thames management is about 700 acres.

The Upper Thames Conservation Authority administers a much larger area of public land. Included are 14 conservation areas totalling 8,513 acres, with the three largest each over 2,450 acres and offering camping facilities as well. As shown in Table 20, total acreage of Authority land in the Upper Thames is about 8,652 acres.

TABLE 19: CONSERVATION AREAS UNDER LOWER THAMES CONSERVATION AUTHORITY

Conservation Areas Name	Size (Acres)	Location
Sharon Creek Cons. Area	112	Delaware (Twp.) (M)
Delaware Flood Plains	7.5	Delaware (Twp.) (M)
Milstream Cons. Area	13	Caradoc (Twp.) (M)
Longwoods Rd. Cons. Area	154	Caradoc (Twp.) (M)
Big Bend Cons. Area	90	Mosa (Twp.) (M)
Harwich-401 Cons. Area	75	Harwich (Twp.) (K)
Thames Grove Cons. Area	26.5	City of Chatham (K)
Gov't Dock and Lighthouse Cons. Area	5	Tilbury N(Twp.) (EX)
	483.0	
Miller's Sanctuary	5.49	Norwich (Twp.) (K)
Riverbank Property	2	Chatham (C)
	7.5	
3 Forest areas under management (Trails)	100	Ekfrid (Twp.) (M)
	10	Caradoc (Twp.) (M)
	100	Mosa (Twp.) (M)
	210	
Grand Total:	700.5	

Source: Lower Thames Conservation Authority

C = City
EX = Essex
K = Kent
M = Middlesex

TABLE 20: CONSERVATION AREAS UNDER UPPER THAMES CONSERVATION AUTHORITY

Conservation Areas

Name	Size (Acres)	Location
Fanshawe C.A.	2,465	London Twp., W.Nissouri Twp. (M)
Wildwood C.A.	3,100	Downie, Blanshard, East Nissouri, Zorra West Twps. (P and O)
Pittock C.A.	2,640	Blandford, Zorra E. Twps., Woodstock (O)
Harrington C.A.	15	Zorra W. (O)
Shakespeare C.A.	27	North Easthope (P)
Kirkton C.A.	3.5	Blandshard (P)
Centreville C.A.	6.5	Oxford W. (O)
Fullarton C.A.	77	Fullarton (P)
Dingman Creek C.A.	56	Westminster (M)
Dorchester C.A.	17	North Dorchester (M)
Embro	29	Zorra West (O)
Harmony	25	Easthope South (P)
Reynold's Creek	35	Dorchester North (M)
Westminster Centennial Park	17	Westminster (M)
	8,513.0	
Woodham Reforestation Area (not for public use)	74	Blandshard (P)
Dr. Muray Forest	65	Downie (P)
	139	
Grand Total:	8,652 Acres	

Source: Upper Thames Conservation Authority
M = Middlesex
O = Oxford
P = Perth

Other Recreational Facilities: An increasingly popular recreational pastime in Canada has been camping. The Thames River watershed has 26 campgrounds of which 23 are privately owned. Additional private campgrounds are presently being planned. Out of a total of 2,210 tent and trailer sites, 1,645 or 74.4% are under private administration. Table 21 describes the location and size of the private campgrounds. However, once again the shorelines of the Great Lakes offer the greatest attractions for campers from the watershed or from without the area. There are several large provincial parks offering camping facilities and many private campgrounds bordering lakes Erie and Huron. Pinery Provincial Park contains 1,422 tent and trailer sites and Rondeau has 413. However, there are still times during the summer, such as on long week-ends, when demand outstrips supply at these lakeshore campgrounds.

Boating is also an increasingly popular recreational activity for area residents. Their needs are met by facilities external to the watershed since there are but three marinas on the Thames River (two in Chatham and one in Tilbury) according to the Ministry of Industry and Tourism's "Boating; Ontario, 1973". At the three largest conservation areas, Fanshawe, Pittock and Wildwoods, the large reservoirs are beginning to attract sailboaters. However, reservoirs do not have the same ecological characteristics as lakes and may be affected adversely by large numbers of people so this activity cannot be encouraged.

Winter alpine skiing facilities are also very meagre within the watershed and hindered by a relatively flat terrain and low snowfall. Clubs exist at London, Thamesford, and Woodstock, with the latter also offering cross country touring facilities. This latter type of skiing is currently undergoing a surge in popularity and ski trail facilities could be expanded somewhat in the watershed since large slopes are not prerequisites for a good site. Snowmobiling is another winter activity of recent popularity and there are two private snowmobile facilities located at Blenheim (1,000 acres) and Bothwell (50 acres).

Many conservation area parks located near London, Stratford, Woodstock, and Chatham provide facilities for such winter sports and activities as skating, cross-country skiing, tobogganing, snowshoeing, and snowmobiling.

Perhaps the main cultural attraction for watershed residents and for tourists alike, is the Stratford Shakespearean Festival. In 1966, a 'Stratford Visitors Survey', conducted by the then Department of Tourism and Information, showed that approximately $8 million was generated by tourists in Stratford for that year. Of this expenditure, $5 million

TABLE 21: PRIVATE CAMPGROUNDS: THAMES RIVER WATERSHED

Name	Size (Acres)	Location
Chatham Trailer Park	2	Chatham (City) (K)
Cover Mobile Home Park	13	London (City) (M)
Don's Overnight Camping	1	Tilbury (City) (K)
Tilbury Trailer Camp	25	Tilbury (city) (K)
South Side Park	60	Woodstock (City) (O)
Prospect Hill Camping Ground	17	Biddulph (Twp.) (M)
Wesonta Summer Resort	2	Blanshard (Twp.) (P)
Hidden Springs Tent and Trailer Park	9	Dereham 9Twp.) (O)
Golden Arrow Park	48	Dorchester N.(Twp.) (M)
Sebringville Tent and Trailer Park	1	Downie (Twp.) (P)
Harvey's Campsite	5	Ekfrid (Twp.) (M)
Stratford Trailer Camp	10	Ellice (Twp.) (P)
Windmill Trailer Camp	50	Fullarton (Twp.) (P)
Fernwood Camping Resort	36	Lobo (Twp.) (M)
Oriole Park	25	Lobo (Twp.) (M)
Lakeside Summer Resort	8	Nissouri East (Twp.) (O)
Anthony Mobile Park	2	Nissouri West (Twp.) (M)
Argyle Acres Trailer Park	17	Nissouri West (Twp.) (M)
Maple Lake Park	10	Zorra East (Twp.) (O)
Park Haven Lake	75	Zorra East (Twp.) (O)
Willow Lake Park	21	Zorra East (O)
Happy Hills Camp Ground	200	Zorra West (Twp.) (O)
Oak Garden Park	50	Zone (Twp.) (K)
Total:	718	

Source: "CAMPING", Ministry of Industry and Tourism; 1973.

K = Kent
O = Oxford
P = Perth
M = Middlesex

was spent by visitors who came primarily to see the Festival. Moreover, since 94% of the respondents said the main reason for visiting Stratford was the Festival, clearly it represents a major source of income for that City.

The general region of southwestern Ontario, in which the Thames River watershed represents the backbone, appears to be attracting a substantial number of tourists. According to the 1971 "Tourism Statistical Handbook", published by the Ministry of Industry and Tourism, the 'Kent-Essex' area ranked third out of 32 provincial vacation areas in terms of total number of visits. Similarly, the 'Central Erie' area, encompassing Norfolk, Elgin, Middlesex and Oxford Counties, ranked fourth, and 'Mid-Western Ontario', including Huron, Perth, Wellington and Waterloo Counties ranked fifth behind the 'Niagara-Iroquois' (1st) and 'Metropolitan Toronto' (2nd) vacation areas. For the 'Kent-Essex' area, Americans made up the bulk of visitors (over 60%) whereas most of the visitors to Central Erie and Mid-western Ontario originated from within the province.

Future Recreational Development: It is apparent that, in analyzing future recreational needs for the Watershed, one must account for the recreational habits of both local residents and for external visitors, including the increasing influx of American visitors from the Port Huron-Detroit-Toledo conurbation. An indication of recreational activities being pursued and the frequency of use would be necessary for the analysis.

Since a location of a major recreation facility is usually related to a natural resource attraction, planning for optimum use of recreation facilities assumes a knowledge and appreciation of its natural resource base.

Besides increasing the areas of public open space in the face of a growing population, camping facilities in the Watershed could also be expanded using future reservoir sites as possible locations. As previously mentioned, demand for campsites is frequently greater than the supply in the more popular campgrounds of the Region. However when planning for future campgrounds two restrictions must be accounted for: the limitation of land adjacent to popular recreation resources suitable for campground development; and the increasing cost of land. Unplanned privately initiated campground development on Class I and II soils, can contribute to the reduction of productive farmland.

In the future, although it is necessary to expand public open space, it is probable that since the Watershed lacks many natural resource attractions and is basically at the heart of a rich agricultural region, the demand for recreational activities will continue to be met by facilities outside the Region.

APPENDIX I

BRIEF GROWTH OUTLINES FOR URBAN MUNICIPALITIES WITH OFFICIAL PLANS

London (c) M: planning period: 1970 - 1990

The official plan of London calls for a population of 300,000 by 1980 and 385,000 by 1990. This is based on an anticipated growth rate of approximately 3%/annum, and on the assumption of continued growth in the industrial sector to be encouraged by public and private agencies and protected by zoning. The urbanization of large areas of the city's undeveloped land will be permitted to occur in two stages: stage 1 occurring up to 1980 or 300,000 persons; stage 2, beyond 1980 or greater than 300,000 persons. Council has estimated a tentative range for the ultimate population of London as being between 500,000 and 600,000 persons - the former figure based on the belief that London's citizenry desire a city large enough to provide major cultural and entertainment facilities etc., and the latter figure based on studies which account for present city boundaries and any lands that may be annexed.

Chatham (c) K: planning period: 1972 - 1992

By the early 1990's it is forecast that approximately 46,000 persons will reside in the City in keeping with the various projections that have been made in supporting studies. This is contingent upon the continued encouragement of industry, a major shopping centre development within the next 10 years, increasing tourist potential, and the progressive building up of the downtown area. A population figure of around 50,000 + has been arrived at by considering the present availability of services, costs of providing additional services, and current densities found in the City. This "contingency figure", although less realistic, will still be used in the designing and providing of public works and services.

Woodstock (c) O: planning period: 1965 - 1990

By 1990, it is believed that approximately 39,100 persons will reside in Woodstock assuming continued residential development and industrial growth. The official plan calls for orderly growth and a City divided into six service areas delimited by pre-engineering designs of sanitary sewer drainage areas. Major commercial development will continue to concentrate in the established Central Business District, new industrial growth will occur in the southern and southeastern sections of the City and new residential development will be accommodated in either the southern or northern sectors. Present land within

the municipality is said to be sufficient and capable of supporting a maximum of 70,000 persons.

Stratford (c) P: planning period: 1965 - 1985

By 1985 it is postulated that Stratford will contain 35,000 persons, although various methods of population projection resulted in a range between 26,289 to 40,000. It is thought that manufacturing will continue to be the major segment of Stratford's economic base and that the expansion of existing industries as well as the establishment of new ones will be the prime exponents of future growth. Other growth parameters include the continued attraction of the Shakespearean Festival and the City's continuing role as a regional centre in retailing, government, education, health and welfare services, and manufacturing. In estimating future populations, for newly developed areas 12 persons/acre was used as a growth assumption, and in apartment concentrations, 15 persons/acre was the density used.

Ingersoll (t) O: planning period: 1966 - 1986

Ingersoll's official plan calls for a population of 14,000 by 1986 based on the Town's ability to capture the same percentage of Ontario's future anticipated growth as in the past. However, this can only be realized if additional space can be found for the town to grow and suitable areas can be made available to attract new industries. Although the Official Plan sees "little difficulty" in providing for future commercial development, providing for future industrial growth "presents a serious problem". The Plan has been designed as a basis for the organization of land uses and community services in order to alleviate some of the restraints on growth such as a lack of industrial land, which stymied past growth.

Mitchell (t) P: planning period: 1967 - 1986

By 1986, it is estimated that Mitchell will have a population of approximately 3,500. This will entail further industrial development, extension of serviced areas, new residential areas based on the neighbourhood concept to be established around the central core, and also new commercial development at the core to serve the expanded residential community anticipated by the Official Plan.

Ridgetown (t) K: planning period: 1968 - 1988

By 1988 it is anticipated that the population of Ridgetown will be about 3,500 persons assuming the present (1967) population growth rate of 1.3%. The Official Plan notes that if any major employment opportunities should arise during the planning period population projections would have to be re-examined since such opportunities could significantly change the growth rate of the town.

Tilbury (t) K: planning period: 1971 - 1991

The Erie St. Clair Planning Area foresees Tilbury's 1991 population as falling between a low of 4,850 and a high of 6,400. A recent study has revealed that people are moving into Tilbury at a more rapid pace and as residents commute to Windsor and Chatham, it is recommended that Tilbury be designated by the Province as a preferred area of light industry. The local economy of the area will continue to expand due to the areas's dormitory function and industrial base together with a moderate expansion of the tourist industry in lakeshore areas.

APPENDIX II

BRIEF GROWTH OUTLINES FOR RURAL MUNICIPALITIES WITH OFFICIAL PLANS

Note: Population estimates for each township pertaining to the Thames River Watershed are enclosed in brackets.

Aldborough and Dunwich: (West Elgin Planning Area) E

An official plan has just appeared in draft (James F. MacLaren Ltd. Consulting Engineers). It foresees Aldborough over the next 20 years growing to about 3,400 (1,666) persons and Dunwich to about 2,500 (1,175) persons. The goals of future population growth were: assumed most of the growth would take place in the villages of the Planning Area; these villages were not to grow beyond a doubling in hopes of retaining their present small village environment; the townships above will continue their slow rate of growth.

Southwold (Elgin Planning Area) E

Based on the assumption of a continuing constant growth rate of 1.2%/annum, Southwold township by 1995 should have about 5,650 (1130) persons. As a direct consequence of improved transportation linkages to the London area, there is a growing tendency in the role of Elgin Planning Area to become a dormitory for portions of the London labour force. Hence, it is felt that employment opportunities should be encouraged within the planning area so that the need for residents to migrate beyond the Elgin Planning Area for employment is reduced. Concurrently, a desired goal is for the township to remain predominantly agricultural and rural.

Tilbury (W) (Erie/St.Clair Planning Area) EX

By 1991, the Erie/St.Clair Planning Area foresees Tilbury (W) township's falling within a range of 1,600 (1050) to 1,814 (1179) persons.

Tilbury (N) (Erie/St.Clair Planning Area) EX

By 1991, the Erie/St.Clair Planning Area predicts a population for Tilbury (N) between 3,240 (1847) and 4,100 (2337) persons.

Chatham K

From 1968 to 1978, based on the least squares method, Chatham township will grow by 1,100 (143) persons to 8,300 (1079). Further projecting, a population between 9,995 (1299) to 10,000 (1300) will be reached by 1990. It will be the intention of the Official Plan to protect this agricultural township from scattered urban development. Urbanization for residential purposes will be permitted only as limited infilling or enlargement of Hamlets and certain other areas partially developed for

residential purposes. Also included are certain new estate-type residential areas.

Dover K

According to a draft proposal plan (submitted in the mid '60's with no hope of official approval due to planning board-Council conflicts) the population was predicted as decreasing from 4,300 (1171) in 1969 to 4,000 (1080) in 1979.

Howard K

The Official Plan of Howard township calls for a population of approximately 3,000 (2100) by 1991 assuming a growth rate of 0.5%/annum. The ratio of farm population relative to non-farm population will continue to decline; however, it is expected that current agricultural production or farm acreage will not be altered significantly during the planning period so that agriculture should continue to dominate the land use and economic base. The installation of a proposed municipal sanitary sewer system in Ridgetown should increase the potential for urban type development on the lands in the township adjacent to Ridgetown where there would be future possibility of extending services.

Raleigh K

Raleigh's 20 year plan anticipates a population of 6,400 (5700) by 1992 or an increase of 900 (301) persons over 1972. This assumes: (1) all land classified as residential in the O.P. is used up in 20 years; (2) no problems obtaining a suitable supply of well water and/or disposing of sanitary wastes by means of septic tanks will be incurred; (3) all existing residences will be used for that purpose; (4) the average annual growth rate is thus 0.76 persons/year based on the assessed population count. It is recommended that limited growth be permitted with the prerequisites that such development will not unduly strain municipal resources and that the interests of agriculture will be given priority. The Plan proposed only 2 small areas for residential use in fulfillment of prior commitments.

Romney K (Erie/St.Clair Planning Area)

By 1991, the Erie/St. Clair Planning Area predicts that Romney's population should fall between 2,264 (838) and 2,050 (759).

Tilbury (E) K (Erie/St.Clair Planning Area)

By 1991, the Erie/St.Clair Planning Area foresees a population between 3,068 (2915) and 2,840 (2698) for Tilbury (E).

Caradoc M

By 1992, the population of Caradoc has been projected to lie between 7,700 (2387) and 8,400 (2604) if trends of the past 20 years continue. The rate of population growth of course would be generated outside of the township. As the city of London grows, so also will the demand for rural non-farm housing and for the quieter amenities of small towns and villages. In short, the township could play a greater dormitory function for London's labour force. However, the above growth cannot be accommodated until a water supply system is available in Melbourne, Mount Brydges or Campbellville.

Delaware M

Policies of Delaware's Official Plan call for an anticipated population growth of 300 (210) persons between 1971 - 1981 and 400 - 600 (280-420) persons between 1981-1991. 1980 and 1991 population would thus be respectively 2,500 (1750) and between 2,900 and 3,100 (2030 and 2170). Population growth of Delaware is contingent on the economic growth of London as the township is expected to fulfill its dormitory function for part of London's labour force. A more recent population trend in Delaware has been one of increasing growth based on urban "spill-over" (people moving into the area yet working in London) and will pose one of the important planning issues. The 1980 population figure will result from urban residential development of a rate of about 10-15 dwellings/year minus an out-migration of about 10-20 persons/year. It is also assumed that there will be a limited amount of new commercial industrial development in Delaware.

Westminster M

It is purported that the population of Westminster will increase to 7,585 (4551) by 1988 according to its Official Plan - not an elaborate or finely detailed plan.

Biddulph M

It is estimated that the population of Biddulph by 1992 will be approximately 3,040 (1003) persons, assuming an anticipated population growth rate of approximately 2.0% per annum. Urban type of development will increase primarily in the Village of Grasston and to a lesser degree in the Hamlet of Clandeboye. However, only very limited non-agricultural development will be allowed to occur in the rural areas of the township as agriculture will continue to be of vital importance and will continue to be the major source of employment in Biddulph. By 1992, it is unlikely that Biddulph will experience a substantial increase in its farm population, especially with the trend to farm consolidation, and thus population increase will occur primarily in the non-farm population sector.

Lobo M

In the recent past Lobo's population has increased at an average rate of approximately 2.5%/annum which if continued, will result in a population of 5,236 (1047) by 1991. The potential population may be higher or lower ((4,000-8,900 (800-1780)) due to a variety of external factors beyond control of Lobo such as: the portion of township population that comprises part of London's work force which is dependent on the growth of industrial opportunities in London, and the eventual location of the London by-pass which may effect Lobo's population by making the township a more attractive place to live by cutting down commuting time.

Nissouri (W) M

The Official Plan of Nissouri (W) anticipates a 1992 population of approximately 4,856 assuming a growth rate of 2.0%/annum in consideration of past and present trends. There is a belief that Nissouri (W), being more inaccessible, will avoid some of the pressures of urban overspill from London. Hence, urban type of development will increase primarily in Thorndale and to a lesser degree in the hamlets of Belton and Wellburn while only very limited non-agricultural development will take place in the rural areas of the township. The Upper Thames River Valley and small portions of its tributaries will be the choice areas for rural-residential dwellings on large lots. It is unlikely that Nissouri (W) will experience within 20 years a substantial increase in its farm population and the hamlets of Belton, Crumlin, Wellburn, and the Village of Thorndale should accommodate most of the population increase. Agriculture will continue to be the major source of employment.

Fullarton P (Mitchell District and Planning Area)

By 1981, it is estimated that Fullarton's population will range from 1,741 to 1,569 with an average of 1,655. In 1991, the comparable figures are 1,884 to 1,595 with an average of 1,740. These figures are based upon present changes in the population and on the current and past trends in the economic structure of the area. There are many factors affecting the population trends: (1) an indication that the birth rate is beginning to stabilize and with a reduction in the death rate, will result in an increase in natural increase; (2) a continuation of farm mechanization and consolidation leading to a decline in rural population; (3) a continually increasing attraction of urban areas (e.g. the 'Golden Triangle', Galt, Stratford) resulting in out-migration from the rural townships: (4) a trend toward exurbanite living and rural non-farm development within commuting distance of Stratford and Mitchell. This factor is expected to increase the full-time population

of rural portions with most of the growth to occur in fringe areas in and around hamlets and built-up areas. This will offset the expected decrease in farm population. Major residential development will be encouraged to locate in well planned and serviced areas within nearby urban centres and agriculture will continue to be the dominant use of land in Fullarton, Hibbert and Logan townships.

Logan P (Mitchell and District Planning Area)

By 1981, the Official Plan calls for Logan's population to fall between 2,538 (2030) and 2,343 (1874) and an average of 2,441 (1953). In 1991 comparable population figures are 2,748 (2198) to 2,391 (1913) with an average of 2,570 (2056). See Fullarton Township for growth outline and population growth parameters.

Hibbert P (Mitchell and District Planning Area)

The Official Plan estimates that Hibbert will reach a population between 1,746 (297) and 1,615 (275) with an average of 1,681 (286) by 1981. By 1991, comparable population figures are 1,864 (317) to 1,631 (277) with an average of 1,748 (297). See Fullarton Township for growth outline and population growth parameters.

Mornington P

By 1991 it is estimated that Mornington Township will have a population between 4,623 (92) and 3,982 (80) persons. Both Huron and Perth Counties have a natural increase greater than the population increase indicating out-migration perhaps to the 'Golden Triangle', and, that there is a decrease in farm population. Factors affecting future population growth include: (1) there is some indication that the birth rate is beginning to stabilize and this, combined with a decrease in death rates, will lead to an increase in natural increase: (2) a continued and increasing attraction of urban areas resulting in out-migration of rural people; (3) an offsetting trend to rural non-farm development within the commutershed of Stratford and Listowel which is expected to increase the full-time population in the rural portion of the township; (4) a decreasing rural farm population is expected to stabilize as farming units reach optimum size and efficiency.

Huron County Planning ARea (Usborne 17%, McKillop 1%, Grey 1%)

Population projections were estimated on a county level only. In Huron County population generation is not a uniform process across the County as the majority of towns, especially Exeter, are growing more rapidly compared to other municipalities. Villages show modest gains while the townships

are esentially stable with the exception of several townships, which are in decline. 56% of Huron County's total population reside in rural areas. By 1985 the urban areas are expected in aggregate to increase from 22,326 to 28,774. Rural areas are not expected to expand substantially at all.

Central Perth Planning Area

(Ellice,	Downie,	Easthope	N and S)
86%	100%	47%	83%

Taken together, the four townships are expected to increase to 11,000 by 1987 assuming that the ratio between Ontario's and Central Perth Planning Area's populations will continue to be 1.10%. No appreciable change in the general land-use pattern is expected in Central Perth Planning Area. It is proposed that good agricultural lands of the rural townships remain largely in agricultural production and that urban sprawl unrelated to agricultural production be discouraged in the townships.